**Date** July 2, 2012

**To** The Section 316(b) Existing Facilities Rule Record

**From** Erik Helm, U.S. Environmental Protection Agency

**Subject** 316(b) Stated Preference (SP) Survey – National Survey Example

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EPA published a Notice of Data Availability (NODA) on the 316(b) stated preference (SP) survey on June 12, 2012. EPA documented preliminary data, analysis, and results in the survey support document (DCN 11-4524) and the survey analysis memo to the record (DCN 11-4525). The SP survey included four survey regions and a separate national survey. Table 1 lists the states included in each survey region. The purpose of this memorandum is to provide state programs with an example of the national SP survey. Examples for other survey regions are provided in separate memoranda to the record.[1]

**Table 1—Target Sample Sizes and Geographic Stratification Design**

| Survey Region | States Included |
|---|---|
| Northeast | CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT |
| Southeast | AL, FL, GA, LA, MS, NC, SC, TX, VA |
| Inland | AR, AZ, CO, ID, IA, IL, IN, KS, KY, MI, MN, MO, MT, ND, NE, NM, NV, OH, OK, SD, TN, UT, WI, WV, WY |
| Pacific | CA, OR, WA |
| National Survey Version | U.S. (excluding AK and HI) |

The 316(b) SP survey was designed as a choice experiment in which each respondent is asked to answer three separate policy questions. Each policy question presents the current situation (no policy) and two new policy options (Option A and Option B). The respondent is asked to choose his or her preferred policy option. The current situation and new policy options are described in terms of five attributes: (1) commercial fish populations, (2) fish populations (all fish), (3) fish saved per year, (4) condition of aquatic ecosystems, and (5) household cost. EPA used an experimental design to specify attribute levels for the policy questions, to make the most efficient use of survey responses.[2]

The first step in creating the experimental design was to develop the possible attribute levels for inclusion in the survey. Table 2 summarizes the attribute levels used for the national survey. The experimental design included three different possible attribute levels for the environmental attributes (1 through 4 above) and six possible attribute levels for household cost under the new policy options (Option A and Option B). EPA then used the experimental design to "mix and match" the attribute levels and create 72 unique policy questions, each characterized by the current situation and two new policy options. The experimental design for the national survey is presented in Table 3. Each row in Table 3 corresponds to one of the 72 different policy questions. EPA created 24 different versions of the national survey because each individual survey includes only three policy questions (3×24=72). Table 3 also lists the survey

[1] The record also includes example memoranda for the Northeast region (DCN 11-4536), Southeast region (DCN 11-4537), Inland region (DCN 11-4538), and Pacific region (DCN 11-4539).

[2] Refer to Section A of the survey support document for additional detail regarding EPA's method for generating the experimental design.

version to which each policy question was assigned. Choice questions 1, 2, and 3 correspond to survey questions 4, 5, and 6, respectively. The only difference between the versions is the attribute levels presented in survey questions 4, 5, and 6. Version 1 of the national survey is attached to this memorandum. All versions for the national survey are available in the docket for the Section 316(b) existing facilities rule (DCN 11-4527).

**Table 2—Attribute Levels Assigned Across Policy Options and Survey Versions for the National Survey**

| Attribute | Baseline (Status Quo)[a] | Attribute Levels Assigned to Option A vs. Option B Pairs | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| Commercial Fish Populations | 51% | 52% | 54% | 57% | - | - | - |
| Fish Populations (all fish) | 30% | 31% | 32% | 34% | - | - | - |
| Fish Saved per Year | 0% | 25% | 55% | 95% | - | - | - |
| Aquatic Ecosystem Condition | 53% | 54% | 55% | 57% | - | - | - |
| Household Costs | $0 | $12 | $24 | $36 | $48 | $60 | $72 |

[a] Each question includes a "no policy" option, characterized by the baseline levels for each attribute and a household cost of $0. The baseline levels are the same for all choice questions and all 24 versions of the national survey.

## Table 3—Experimental Design for the National Survey

| Survey Version | Policy Question[a] | Option A | | | | | Option B | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Com. Fish.[b] | Fish. Pop.[c] | Fish Saved | Aq. Cond.[d] | Cost | Com. Fish. | Fish. Pop | Fish Saved | Aq. Cond. | Cost |
| 1 | 1 | 54% | 34% | 25% | 55% | $48 | 57% | 31% | 25% | 57% | $48 |
| 1 | 2 | 57% | 32% | 55% | 54% | $60 | 57% | 34% | 95% | 55% | $72 |
| 1 | 3 | 57% | 31% | 55% | 55% | $72 | 54% | 31% | 55% | 54% | $12 |
| 2 | 1 | 57% | 34% | 25% | 55% | $48 | 52% | 32% | 55% | 55% | $12 |
| 2 | 2 | 54% | 32% | 55% | 57% | $24 | 57% | 31% | 55% | 54% | $36 |
| 2 | 3 | 52% | 31% | 25% | 57% | $36 | 54% | 31% | 95% | 54% | $24 |
| 3 | 1 | 57% | 34% | 25% | 54% | $48 | 57% | 31% | 25% | 57% | $72 |
| 3 | 2 | 54% | 32% | 95% | 57% | $60 | 54% | 32% | 95% | 55% | $12 |
| 3 | 3 | 52% | 32% | 25% | 57% | $12 | 52% | 34% | 55% | 57% | $24 |
| 4 | 1 | 54% | 32% | 95% | 57% | $72 | 52% | 34% | 25% | 54% | $72 |
| 4 | 2 | 57% | 34% | 95% | 55% | $36 | 54% | 32% | 55% | 57% | $36 |
| 4 | 3 | 54% | 31% | 55% | 54% | $60 | 52% | 31% | 95% | 55% | $48 |
| 5 | 1 | 57% | 31% | 55% | 55% | $24 | 54% | 34% | 55% | 57% | $48 |
| 5 | 2 | 54% | 31% | 25% | 54% | $36 | 52% | 32% | 25% | 54% | $36 |
| 5 | 3 | 52% | 34% | 55% | 57% | $12 | 54% | 32% | 25% | 54% | $60 |
| 6 | 1 | 52% | 32% | 95% | 55% | $36 | 52% | 34% | 25% | 57% | $72 |
| 6 | 2 | 57% | 31% | 95% | 57% | $60 | 57% | 32% | 95% | 55% | $36 |
| 6 | 3 | 52% | 32% | 55% | 54% | $48 | 54% | 31% | 55% | 54% | $24 |
| 7 | 1 | 52% | 34% | 55% | 57% | $48 | 52% | 34% | 95% | 54% | $12 |
| 7 | 2 | 57% | 32% | 95% | 54% | $24 | 54% | 31% | 25% | 57% | $60 |
| 7 | 3 | 54% | 31% | 25% | 54% | $36 | 57% | 32% | 55% | 55% | $72 |
| 8 | 1 | 54% | 34% | 25% | 54% | $36 | 54% | 34% | 95% | 57% | $72 |
| 8 | 2 | 52% | 32% | 95% | 54% | $60 | 57% | 32% | 55% | 54% | $72 |
| 8 | 3 | 54% | 32% | 55% | 55% | $60 | 52% | 32% | 25% | 55% | $24 |
| 9 | 1 | 57% | 31% | 25% | 57% | $72 | 57% | 32% | 55% | 54% | $48 |
| 9 | 2 | 52% | 34% | 55% | 54% | $24 | 54% | 34% | 95% | 55% | $72 |
| 9 | 3 | 52% | 32% | 95% | 55% | $12 | 52% | 31% | 95% | 57% | $48 |
| 10 | 1 | 57% | 34% | 55% | 54% | $60 | 52% | 34% | 55% | 54% | $24 |
| 10 | 2 | 54% | 32% | 95% | 57% | $48 | 54% | 34% | 95% | 55% | $48 |
| 10 | 3 | 52% | 32% | 55% | 55% | $36 | 57% | 32% | 95% | 57% | $72 |
| 11 | 1 | 54% | 32% | 25% | 54% | $12 | 57% | 34% | 95% | 55% | $60 |
| 11 | 2 | 57% | 34% | 95% | 57% | $60 | 52% | 31% | 25% | 57% | $24 |
| 11 | 3 | 52% | 34% | 55% | 55% | $36 | 54% | 32% | 25% | 54% | $12 |
| 12 | 1 | 57% | 32% | 95% | 54% | $36 | 57% | 34% | 55% | 54% | $48 |
| 12 | 2 | 52% | 31% | 25% | 57% | $60 | 54% | 31% | 95% | 55% | $60 |
| 12 | 3 | 52% | 34% | 55% | 55% | $72 | 52% | 31% | 55% | 57% | $72 |
| 13 | 1 | 57% | 31% | 95% | 57% | $24 | 57% | 34% | 25% | 55% | $24 |
| 13 | 2 | 54% | 31% | 55% | 54% | $12 | 52% | 32% | 95% | 57% | $48 |
| 13 | 3 | 52% | 34% | 25% | 55% | $60 | 54% | 34% | 25% | 54% | $60 |
| 14 | 1 | 54% | 34% | 55% | 57% | $36 | 57% | 32% | 95% | 57% | $24 |
| 14 | 2 | 57% | 32% | 25% | 55% | $60 | 54% | 31% | 95% | 55% | $72 |

## Table 3—Experimental Design for the National Survey

| Survey Version | Policy Question[a] | Option A | | | | | Option B | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Com. Fish.[b] | Fish. Pop.[c] | Fish Saved | Aq. Cond.[d] | Cost | Com. Fish. | Fish. Pop | Fish Saved | Aq. Cond. | Cost |
| 14 | 3 | 57% | 31% | 95% | 54% | $48 | 52% | 34% | 55% | 54% | $60 |
| 15 | 1 | 52% | 31% | 25% | 57% | $36 | 54% | 34% | 55% | 55% | $12 |
| 15 | 2 | 54% | 31% | 55% | 55% | $48 | 57% | 31% | 25% | 55% | $24 |
| 15 | 3 | 54% | 34% | 95% | 54% | $72 | 52% | 32% | 55% | 57% | $60 |
| 16 | 1 | 52% | 32% | 25% | 57% | $48 | 57% | 32% | 55% | 57% | $60 |
| 16 | 2 | 57% | 34% | 55% | 57% | $48 | 54% | 32% | 25% | 54% | $36 |
| 16 | 3 | 54% | 31% | 25% | 55% | $72 | 52% | 34% | 95% | 54% | $24 |
| 17 | 1 | 54% | 31% | 95% | 57% | $48 | 54% | 32% | 95% | 54% | $72 |
| 17 | 2 | 54% | 31% | 95% | 55% | $24 | 54% | 34% | 55% | 57% | $12 |
| 17 | 3 | 57% | 32% | 25% | 57% | $12 | 57% | 31% | 55% | 55% | $60 |
| 18 | 1 | 52% | 31% | 95% | 55% | $48 | 52% | 32% | 25% | 55% | $36 |
| 18 | 2 | 54% | 31% | 55% | 57% | $12 | 57% | 34% | 25% | 57% | $72 |
| 18 | 3 | 52% | 34% | 25% | 54% | $24 | 57% | 31% | 95% | 54% | $12 |
| 19 | 1 | 52% | 34% | 95% | 54% | $12 | 57% | 34% | 25% | 55% | $36 |
| 19 | 2 | 54% | 31% | 95% | 55% | $60 | 52% | 31% | 95% | 54% | $36 |
| 19 | 3 | 57% | 32% | 25% | 55% | $72 | 54% | 32% | 25% | 55% | $24 |
| 20 | 1 | 52% | 34% | 25% | 55% | $60 | 57% | 34% | 25% | 54% | $48 |
| 20 | 2 | 54% | 34% | 95% | 54% | $12 | 54% | 32% | 55% | 55% | $24 |
| 20 | 3 | 57% | 32% | 55% | 57% | $36 | 52% | 31% | 25% | 55% | $12 |
| 21 | 1 | 57% | 31% | 95% | 54% | $72 | 57% | 31% | 25% | 57% | $12 |
| 21 | 2 | 54% | 34% | 25% | 57% | $24 | 52% | 31% | 55% | 55% | $36 |
| 21 | 3 | 52% | 32% | 95% | 55% | $24 | 57% | 32% | 95% | 54% | $24 |
| 22 | 1 | 52% | 31% | 55% | 54% | $60 | 52% | 32% | 25% | 57% | $12 |
| 22 | 2 | 52% | 34% | 95% | 57% | $72 | 54% | 31% | 55% | 55% | $48 |
| 22 | 3 | 57% | 31% | 25% | 55% | $12 | 52% | 34% | 95% | 54% | $36 |
| 23 | 1 | 52% | 31% | 25% | 54% | $24 | 52% | 32% | 25% | 55% | $48 |
| 23 | 2 | 57% | 31% | 95% | 55% | $12 | 57% | 34% | 95% | 54% | $12 |
| 23 | 3 | 57% | 32% | 55% | 54% | $48 | 54% | 34% | 95% | 57% | $36 |
| 24 | 1 | 54% | 32% | 55% | 55% | $12 | 57% | 34% | 55% | 57% | $60 |
| 24 | 2 | 52% | 31% | 55% | 57% | $72 | 54% | 31% | 25% | 54% | $36 |
| 24 | 3 | 57% | 34% | 25% | 57% | $24 | 52% | 32% | 95% | 57% | $72 |

Notes:

[a] Policy questions 1, 2, 3 correspond to survey questions 4,5, and 6, respectively.

[b] "Com.fish" is an abbreviation for commercial fish populations score.

[c] "Fish Pop." is an abbreviation for the fish populations (all fish) score.

[d] "Aq. Cond." is an abbreviation for the aquatic ecosystem condition score.

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Approval expires 7/13/2013
v.1

# Fish and Aquatic Habitat

## A Survey of US Households

The public reporting and recordkeeping burden for this collection of information is estimated to average 30 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed survey to this address.

# HUMAN ACTIVITIES, AQUATIC HABITAT AND FISH

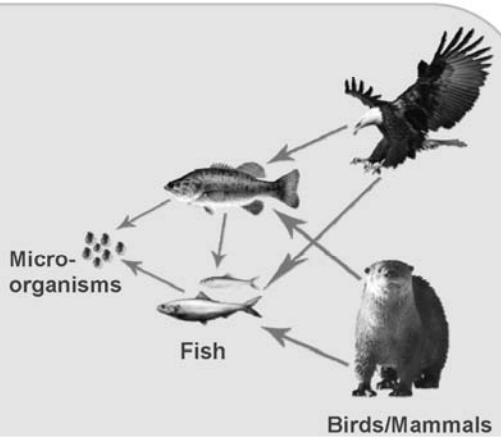
*This survey asks for your opinions regarding policies that would affect fish and habitat in the U.S. Your answers will help the government decide which policies will be enacted. Background information in this survey was provided by the National Marine Fisheries Service, U.S. Environmental Protection Agency, U.S. Geological Survey and other state and federal offices.*

U.S. fresh and salt waters support billions of fish. These include fish that are used by humans, as well as forage fish that are not used by humans, but serve as food for larger fish, birds, and animals.

Natural factors such as weather have always influenced fish, but in recent years human activities have had an increasing effect.

Activities that affect fish include fishing, pollution, commercial and residential development, and the extraction of cooling water at industrial facilities.

Declines in fish can affect the condition of ecological systems, food webs, and related human uses such as fishing.




Food Web

**This survey concerns proposed policies that would reduce fish losses caused by cooling water use by industrial facilities, including factories and power plants. These policies would benefit aquatic ecosystems but would increase the costs of some goods and services you buy, including electricity and common household products.**

# HOW DOES COOLING WATER AFFECT FISH?

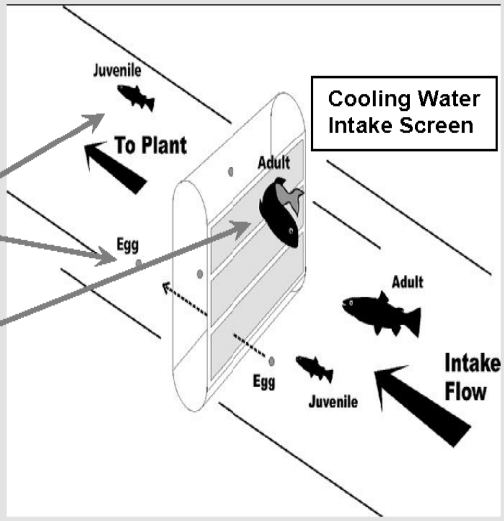
The water that industrial facilities use to cool equipment is pumped from bays, rivers, and lakes. The largest amount is used by power plants that produce electricity.

The equipment that pumps the cooling water kills small fish and fish eggs.

Juvenile fish and eggs move through screens and into the cooling system where they are killed by high temperature.

Large fish may be injured or killed against screens or filters.

Pumping warm water back into the environment (called *thermal discharge*) also affects ecological systems.




**How Fish Are Affected by Water Intake**

Cooling water use affects fresh and salt waters throughout the US (63% of all fish losses are in salt water coastal bays, estuaries, and tidal rivers and 37% in fresh water).

# WHAT KINDS OF FISH ARE AFFECTED BY COOLING WATER USE?

Cooling water use is **not** the largest cause of fish loss in most areas (fishing causes greater losses), but has affected some fish populations.

**About 1/3 of the fish lost are species caught by commercial and recreational fishermen.** Examples include striped bass, flounder, and cod.

**The other 2/3 of the fish lost are forage species not caught by humans but serve as food for larger fish, birds, and animals.** Examples include killifish, silverside, and stickleback.

**Question 1.** When thinking about how industrial facilities use cooling water, please rate the importance of the following to you. Check one box for each.

| | Not Important | | Somewhat Important | | Very Important |
|---|---|---|---|---|---|
| 1. Preventing the loss of fish that are caught by humans | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 2. Preventing the loss of fish that are not caught by humans | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 3. Maintaining the ecological health of rivers, lakes and bays | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 4. Keeping the cost of goods and services low | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 5. Making sure there is enough government regulation of industry | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 6. Making sure there is not too much government regulation of industry | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |

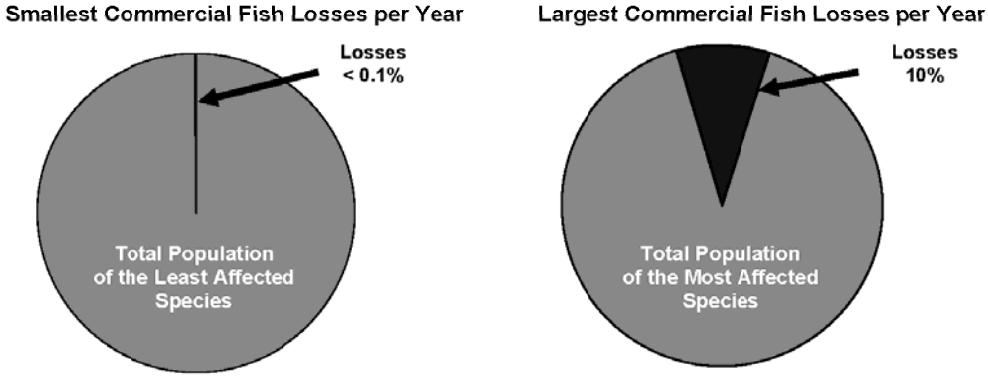
# HOW MANY FISH ARE AFFECTED?

**After accounting for the number of eggs and larvae that would be expected to survive to adulthood, scientists estimate that the equivalent of about 2.5 billion young adult fish (the equivalent of one year old) are lost each year in U.S. coastal and fresh waters due to cooling water use.**

Scientists can predict the number of these fish that will be saved under different policies. This number ranges from 0.6 to 2.4 billion fish saved per year.

**For commercial fish species, losses of young fish in cooling water intakes vary by species, from the equivalent of less than 0.1% to about 10% of a species' total population.**

Scientists expect the yearly effects on other fish species are in the same 0.1% to 10% range. The number of young fish lost in cooling water intakes relative to the total number of fish in the water is relatively high for some species, but low for others.




**Although scientists can predict the number of fish saved each year, the effect on fish populations is uncertain. This is because scientists do not know the total number of all fish in U.S. waters and because many factors – such as cooling water use, fishing, pollution and water temperature – affect fish.**

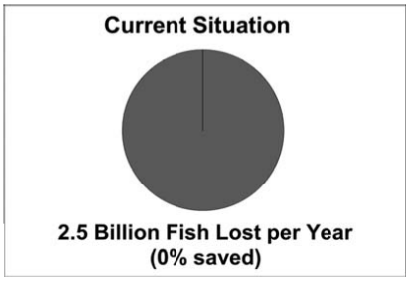
The following page provides information on policies that would be required to reduce these fish losses.

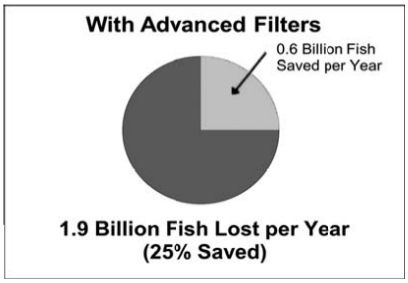
# NEW REGULATIONS ARE BEING PROPOSED TO PROTECT FISH

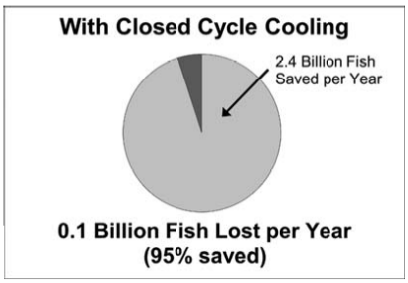
The government is considering new policies to improve the protection of fish.

One policy would require **advanced filters** that block fish from entering cooling water facilities. Requiring advanced filters could reduce fish losses about 25%.

Another possibility is **closed cycle cooling** that recycles and reuses cooling water, so that less water is needed. Requiring closed cycle cooling could reduce fish losses by 95% and also reduces thermal discharge. However, costs are higher than for advanced filters.




Advanced filters and closed cycle cooling are already in use at many facilities and are proven technologies. **New regulations would require a mix of advanced filters and closed cycle cooling at all facilities—with reductions in fish losses between 25% and 95%.**

# HOW IMPORTANT ARE THESE ISSUES TO YOU?

**While these policies would reduce fish losses, they would also increase the costs of producing many goods and services — these costs would be passed on to consumers like you.**

**Question 2.** Compared to other issues that the government might address—such as public safety, education and health—how important is protecting aquatic ecosystems to you? Check one box.

| | Not Important | | Somewhat Important | | Very Important |
|---|---|---|---|---|---|
| Protecting aquatic ecosystems is | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |

**The government needs to know whether households are willing to pay the costs of these new policies.**

**This survey will ask you to compare policies with different effects on cooling water use, fish, and costs to your household. You will be asked to vote for the options you prefer.**

**You will also have the opportunity to support the current situation, with no new policies, and no new costs to your household.**

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# THIS SURVEY IS SIMILAR TO A PUBLIC VOTE

The next part of this survey will ask you to consider different types of policies to protect fish, and indicate how you would vote. Effects of each possible policy will be described using the following scores:

| Effect of Policy | What It Means |
|---|---|
|  **Commercial Fish Populations** (Fish Used by People) | A score between 0 and 100 percent showing **the overall health of commercial and recreational fish populations**. Higher scores mean more fish and greater fishing potential. A score of 100 means that these fish populations are at a size that maximizes long-term harvest; 0 means no harvest. **The current score in U.S. waters is 51.** |
|  **Fish Populations** (All Fish) | A score between 0 and 100 percent showing **the estimated size of all fish populations** compared to natural levels without human influence. A score of 100 means that populations are the largest natural size possible; 0 means no fish. **The current score in U.S. waters is 30.** |
|  **Fish Saved** (per Year) | A score between 0 and 100 percent showing the **reduction in young fish lost** compared to current levels. A score of 100 would mean that no fish are lost in cooling water intakes (all fish would be saved because of the new policy). **The current score in U.S. waters is 0**. This represents the status quo (no policy) with about 18% of plants already using advanced cooling systems. |
|  **Condition of Aquatic Ecosystems** | A score between 0 to 100 percent showing **the ecological condition of affected areas**, compared to the most natural waters in the U.S.. The score is determined by many factors including water quality and temperature, the health of aquatic species, and habitat conditions. Higher scores mean the area is more natural. **The current score in U.S. waters is 53.** |
| **$** Cost per Year | How much the policy will **cost your household, in unavoidable price increases for products and services you buy, including electricity and common household products.** |

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# HOW WOULD YOU RATE THE IMPORTANCE OF THESE EFFECTS?

**Question 3.** When considering policies that affect how facilities use cooling water, how important to you are effects on each of the following scores? Check one box for each. (For reminders of what the scores mean, please see page 7).

| | Not Important | | Somewhat Important | | Very Important |
|---|---|---|---|---|---|
| 1. Effect on **commercial fish populations** | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 2. Effect on the **fish populations (for all fish)** | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 3. Effect on **fish saved** | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 4. Effect on the **condition of aquatic ecosystems** | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| 5. Effect on **cost to my household** | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |

The next questions will ask you to choose between different policy options that would affect fish losses in cooling water systems. You will be given choices and asked to vote for the choice you prefer by checking the appropriate box. Questions will look similar to the sample on the next page.

# SAMPLE QUESTION

***Questions will look like the sample below.***

| Policy Effect | Current Situation (No policy) | Option A | Option B |
|---|---|---|---|
|  **Commercial Fish Populations** **(in 3-5 Years)** | 51% (100% is populations that allow for maximum harvest) | 54% (100% is populations that allow for maximum harvest) | 57% (100% is populations that allow for maximum harvest) |
|  **Fish Populations (all fish)** **(in 3-5 Years)** | 30% (100% is populations without human influence) | 31% (100% is populations without human influence) | 32% (100% is populations without human influence) |
|  **Fish Saved per Year** **(Out of 2.5 billion fish lost in water intakes)** | 0% No change in status quo | 25% 0.6 billion fish saved | 55% 1.4 billion fish saved |
|  **Condition of Aquatic Ecosystems** **(in 3-5 Years)** | 53% (100% is pristine condition) | 54% (100% is pristine condition) | 55% (100% is pristine condition) |
| **$** **Increase in Cost of Living for Your Household** | $0 No cost increase | $36 **per year** ($3 per month) | $72 **per year** ($6 per month) |
| **HOW WOULD YOU VOTE? (CHOOSE ONE ONLY)** | X I would vote for **NO POLICY** | X I would vote for **OPTION A** | X I would vote for **OPTION B** |

**If you do not want A or B,** check this box

If you prefer **Option A,** check this box

If you prefer **Option B,** check this box

# AS YOU VOTE PLEASE REMEMBER

- The map below shows the facilities and areas that would be affected by the proposed policies.
- The policy options (A and B) given to you each require a different mix of advanced filters and closed cycle cooling in different areas, so effects on fish are different.
- You will be shown different questions, with different combinations of technology and different costs
- Depending on the policies chosen, costs to your household could range from $0 per year to a maximum of $72 per year (from $0 per month to a maximum of $6 per month).
- Depending on the type of technology required and other factors, effects on fish and ecosystems may be different—even if the annual reduction in fish losses is similar.
- Consider each pair of policy options separately—do not add them up or compare programs from different pages.
- Scientists expect that effects on the environment and economy not shown explicitly will be small. For example, studies of industry suggest that effects on employment will be close to zero.
- Your votes are important. Answer all questions as if this were a real, binding vote.


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**Question 4.** Assume that Options A and B would require a different mix of filters and closed cycle cooling in different areas. Assume all types of fish are affected. How would you vote?

| Policy Effect US | Current Situation (No policy) | Option A | Option B |
|---|---|---|---|
|  **Commercial Fish Populations** **(in 3-5 Years)** | 51% (100% is populations that allow for maximum harvest) | 54% (100% is populations that allow for maximum harvest) | 57% (100% is populations that allow for maximum harvest) |
|  **Fish Populations (all fish)** **(in 3-5 Years)** | 30% (100% is populations without human influence) | 34% (100% is populations without human influence) | 31% (100% is populations without human influence) |
|  **Fish Saved per Year** **(Out of 2.5 billion fish lost in water intakes)** | 0% No change in status quo | 25% 0.6 billion fish saved | 25% 0.6 billion fish saved |
|  **Condition of Aquatic Ecosystems** **(in 3-5 Years)** | 53% (100% is pristine condition) | 55% (100% is pristine condition) | 57% (100% is pristine condition) |
| **$** **Increase in Cost of Living for Your Household** | $0 No cost increase | $48 **per year** ($4 per month) | $48 **per year** ($4 per month) |
| **HOW WOULD YOU VOTE? (CHOOSE ONE ONLY)** | ☐ I would vote for **NO POLICY** | ☐ I would vote for **OPTION A** | ☐ I would vote for **OPTION B** |

# POLICIES COULD REQUIRE DIFFERENT COMBINATIONS OF TECHNOLOGY

**Now you will be asked to consider a new set of policy options for U.S. waters. As you vote, please remember—**

- Questions 5 and 6 present new sets of policy options. These options require a different mix of technologies in different areas.
- Each question is a separate vote. Questions 5 and 6 cannot be directly compared to each other, or to Question 4.
- Do not add up effects or costs across different questions.
- Policy costs and effects depend on many factors. Saving more fish does not necessarily mean that all effects will improve.

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**Question 5.** Assume that Options A and B would require a different mix of filters and closed cycle cooling in different areas. Assume all types of fish are affected. How would you vote?

| Policy Effect US | Current Situation (No policy) | Option A | Option B |
|---|---|---|---|
|  **Commercial Fish Populations** **(in 3-5 Years)** | 51% (100% is populations that allow for maximum harvest) | 57% (100% is populations that allow for maximum harvest) | 57% (100% is populations that allow for maximum harvest) |
|  **Fish Populations (all fish)** **(in 3-5 Years)** | 30% (100% is populations without human influence) | 32% (100% is populations without human influence) | 34% (100% is populations without human influence) |
|  **Fish Saved per Year** **(Out of 2.5 billion fish lost in water intakes)** | 0% No change in status quo | 55% 1.4 billion fish saved | 95% 2.4 billion fish saved |
|  **Condition of Aquatic Ecosystems** **(in 3-5 Years)** | 53% (100% is pristine condition) | 54% (100% is pristine condition) | 55% (100% is pristine condition) |
| **$** **Increase in Cost of Living for Your Household** | $0 No cost increase | $60 **per year** ($5 per month) | $72 **per year** ($6 per month) |
| **HOW WOULD YOU VOTE? (CHOOSE ONE ONLY)** | ☐ I would vote for **NO POLICY** | ☐ I would vote for **OPTION A** | ☐ I would vote for **OPTION B** |

**Question 6.** Assume that Options A and B would require a different mix of filters and closed cycle cooling in different areas. Assume all types of fish are affected. How would you vote?

| Policy Effect US | Current Situation (No policy) | Option A | Option B |
|---|---|---|---|
|  **Commercial Fish Populations** **(in 3-5 Years)** | 51% (100% is populations that allow for maximum harvest) | 57% (100% is populations that allow for maximum harvest) | 54% (100% is populations that allow for maximum harvest) |
|  **Fish Populations (all fish)** **(in 3-5 Years)** | 30% (100% is populations without human influence) | 31% (100% is populations without human influence) | 31% (100% is populations without human influence) |
|  **Fish Saved per Year** **(Out of 2.5 billion fish lost in water intakes)** | 0% No change in status quo | 55% 1.4 billion fish saved | 55% 1.4 billion fish saved |
|  **Condition of Aquatic Ecosystems** **(in 3-5 Years)** | 53% (100% is pristine condition) | 55% (100% is pristine condition) | 54% (100% is pristine condition) |
| **$** **Increase in Cost of Living for Your Household** | $0 No cost increase | $72 **per year** ($6 per month) | $12 **per year** ($1 per month) |
| **HOW WOULD YOU VOTE? (CHOOSE ONE ONLY)** | ☐ I would vote for **NO POLICY** | ☐ I would vote for **OPTION A** | ☐ I would vote for **OPTION B** |

**Question 7.** If you **always voted for NO POLICY** in questions 4-6, what was the primary reason? Check one. (Skip this question if you voted for Option A or B in any question above.)

_____ The cost to my household was too high

_____ Preventing fish losses is not important to me

_____ I do not trust the government to fix the problem

_____ I would rather spend my money on other things

_____ I did not believe the choices were realistic

_____ Since the problem was created by private facilities, they should fix it without passing costs on to consumers

**Question 8.** Indicate how strongly you agree with the following statements about questions 4 - 6 and the information provided. Check one box for each.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| | ◄ | | | | ► |
| The survey provided enough information for me to make informed choices | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| I feel confident about my answers | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Information in the survey was easy for me to understand | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Information in the survey was fair and unbiased | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Questions were easy for me to answer | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| I would vote the same way in an actual public vote | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| The effect of the proposed policies depends on many factors | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Future ecological conditions are never 100% guaranteed | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |

**Question 9.** How much did the following factors affect your answers to questions 4 – 6? Check one box for each row.

| | Effect on my answers to questions 4-6 | | | | |
|---|---|---|---|---|---|
| | Very Small Effect | | Moderate Effect | | Very Large Effect |
| Wanting to reduce taxes or costs to my household. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to prevent the loss of industrial jobs. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to preserve fish for commercial fishing. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to send a message that all environmental issues are important regardless of cost. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to preserve fish for recreation (fishing, etc.). | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to preserve fish to benefit aquatic ecosystems. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to know that fish exist in local lakes, rivers and bays. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to pay my fair share for government programs. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to sustain the competitiveness of US business. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to preserve fish as a source of food for people. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |
| Wanting to preserve fish and ecosystems for future generations. | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 |

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**Question 10.** How many days did you participate in the following during the last year? For trips longer than one day, please count each day separately. Check one box for each row.

| | Number of days you did the activity during the past year | | | | |
|---|---|---|---|---|---|
| | 0 | 1-5 | 6-10 | 11-15 | 16+ |
| Boating / Canoeing / Kayaking | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Swimming / Going to the Beach | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Recreational Fishing (Fresh Water) | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Recreational Fishing (Salt Water) | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Shellfishing / Crabbing | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |
| Scuba Diving / Snorkeling | ☐1 | ☐2 | ☐3 | ☐4 | ☐5 |

**Question 11.** Do you consume commercially caught fish or seafood? ❑ Yes ❑ No

Do you consume recreationally caught fish or seafood? ❑ Yes ❑ No

***The following questions ensure that all groups are fairly represented. All answers are anonymous and confidential.***

12. What is your age?___ years

13. What is your gender? ❑ Male ❑ Female

14. What is the highest level of education that you have completed?

- ❑ Less than high school
- ❑ High school or equivalent
- ❑ High school + technical school
- ❑ One or more years of college
- ❑ Bachelor's Degree
- ❑ Graduate Degree

15. How many people live in your household? _____

16. How many of these people are 16 years of age or older? ____

17. How many of these people are 6 years of age or younger? ____

18. What is your zip code? _____

19. Are you currently employed? ❑ Yes ❑ No

20. Are you currently employed in the commercial fish industry? ❑ Yes ❑ No

21. Are you of Hispanic or Latino origin? ❑ Yes ❑ No

22. Which of the following racial categories describes you? You may select more than one.

- ❑ American Indian or Alaskan Native
- ❑ Asian
- ❑ Black or African American
- ❑ White
- ❑ Native Hawaiian or Other Pacific Islander

23. What category comes closest to your total household income?

- ☐ Less than $10,000
- ☐ $10,000 to $19,999
- ☐ $20,000 to $39,999
- ☐ $40,000 to $59,999
- ☐ $60,000 to $79,999
- ☐ $80,000 to $99,999
- ☐ $100,000 to $249,999
- ☐ $250,000 or more

24. If you have any comments on this survey, please write them below:

***Thank you for your participation in this important survey!***

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